

XXVI.—Notes on Gerbils referred to the Genus *Meriones*, with Descriptions of new Species and Subspecies. By OLDFIELD THOMAS.

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THE genus *Meriones* has long been in a very great state of confusion, partly owing to the carelessness of authors in lumping specimens from all sorts of localities together, and partly to the fact that the genus falls into groups distinguishable only by the different sizes of their bullæ, and that members of each of the groups may be found living side by side—so that a single district may contain two or three species, all looking so alike as to be readily confused with each other, and yet really distinguishable on close examination. Thus no less than three species are found in Egypt, the very country where certain names have been overlooked or misapplied—so as to add to the general confusion.

I have not been able to complete the work in any sense, but can make some preliminary observations on the habitats and characteristics of the different forms.

The bullæ, whose structure and development give the primary means of distinction, enable us to separate the species (apart from the aberrant *calurus* and *hurriane*) into four groups, as follows:—

(a) The bullæ very large, the swelling in front of the meatus projecting in front of the level of the hindmost corner of the zygomata, and the supraneatal triangle also very large. Meatal length (*i. e.* the distance from the back of the bulla to the front of the meatal swelling) approximately 14–15 mm.

(b) Bullæ similarly large, but the supraneatal triangle comparatively small. (Tail usually more bushy than in other species.)

(c) Bullæ smaller, the front side of the meatus little swollen, and not reaching to the level of the zygoma (meatal length about 11–12 mm.); triangle also small.

(d) Bullæ quite small for the genus, almost in normal proportion to the general size of the skull. (Meatal length in *M. blackleri* 8·2 mm.)

In Algeria the confusion of the names is too great to clear up now, but as a preliminary it may be said that north of the Atlas we have true *shawi* (group *c*), which is represented on

the plateau by *richardi* *, and south of the Atlas by *guyoni*. Then the large-bulla group *b* is represented south of the Atlas by *schousboei* (a form doubtfully separable from *libycus*), but is not found to the north of the range.

Working eastwards, we have in Tripoli local representatives of *a*, *b*, and *c* ranging widely over the country, which is not broken up by any prominent orographical features. Two of these seem to need new subspecific names.

Next, in Egypt we have first of all the comparatively bushy-tailed animal, called quite unaccountably by de Winton † "*M. crassus selysii*" (*sic*), which was obtained by Mr. N. C. Rothschild in the Wadi Natron, and which I identify with *Meriones libycus*, Lichtenstein, the first African name in the genus, but one hitherto altogether ignored. The locality, dimensions, and the "*caudâ apice floccosa*" all agree with the Wadi Natron animal, and there seems no reason to doubt the identification.

With *libycus* I also synonymize Rüppell's *melanurus*, which has been a prime source of confusion, for not only did he include both Alexandria and Sinai as its habitat, but he sent out specimens under its name which are referable to forms of both group *b* and group *c*. For of the two examples of it that he sent to the British Museum no. 42. 8. 15. 2 is the bushy-tailed *b* species, while 42. 8. 15. 6 belongs to *c*.

In consequence, it appears to be necessary now for me, as the first reviser who has a knowledge of the mixture of the two species, definitely to determine on to which the name *melanurus* shall be placed.

I therefore propose formally to apply it to the one with a prominently black-tufted tail, as Rüppell evidently meant, making the name itself suitable, even though then becoming synonymous with *libycus*.

The other course would result in the species with the least black on its tail bearing the inappropriate name *melanurus*.

In order to make this definite I propose to select as a lectotype of *melanurus* B.M. no. 42. 8. 15. 2, sent as a co-type of it by Rüppell in conjunction with 42. 8. 15. 6, which is

* In dealing with Loche's many names, applied to animals with exact localities recorded, but without any mention of the bullæ, I have thought it best, in view of the admirable pioneer work he has done on the genus, to accept Lataste's reference of them to their respective groups (his "*shawi*" being *c* group and his *erythrurus b* group), and then to take the first name in each group according to its locality, and so identify them.

† Nov. Zool. x. p. 284 (1903). The type of *selysii* was from Oran, and the name is an absolute synonym of *shawi*. On the other hand, *crassus* was from Sinai, and is a wholly different species, belonging to group *a*.

the small-bulla species with almost no black on the tail, later obtained by Dr. Anderson near Alexandria.

This case of *melanurus* is a striking example of the advisability of selecting types, a plan still resisted by naturalists of backward tendencies. Rüppell was little to blame for mixing up the two species, which are really very similar to each other; but had he selected an individual type to represent his name, all the confusion that has surrounded it would have been avoided.

In the Sudan there occurs the gerbil to which Bonhote has applied the name *M. crassus pallidus*, a form belonging to the *a* group, and undoubtedly very nearly allied to the true *crassus* of Sinai, but widely different from Lower Egyptian forms to which that name has been applied.

Further eastwards material does not exist for any general review, but a number of local forms have proved to need description. It may, however, be noted that the *Meriones* of Asia Minor and Palestine seem to be mostly of the *d* group, while the remarkable *M. calurus* of Egypt and Sinai has the bullæ of the size found in group *c*, though the supræmental triangle is unusually small.

With regard to the aberrant *M. hurriane* of Baluchistan and N.W. India, I find that instead of being distinctly a desert animal, with light skull, large bullæ, and short normal claws, it is modified for a burrowing life by having a heavy bowed skull, small bullæ, and elongated digging fore-claws. It appears to me, therefore, that it ought to be generically separated from the other members of the group, and I would propose for it the name of *Cheliones**.

Meriones pallidus tripolius, subsp. n.

Group *a*. Like Sudan *pallidus* in all essential particulars, but the general colour slightly warmer, often approaching cinnamon-buff, and usually getting a little darker towards the base of the tail. Under surface usually white to the bases of the hairs, but sometimes they are pale slaty basally. White ear-patches larger and more conspicuous, generally too large to be hidden by the ear when this is folded backwards. Tail-tuft short and little developed, its hairs scarcely exceeding 10 mm.; the main part of the tail pinkish buff or cinnamon-buff, and equally buffy below; in *pallidus* it is markedly lighter, often white, below.

Skull as in *pallidus*.

* Derived from χηλή, exactly as *Meriones* is from μῆρός.

Dimensions of the type:—

Head and body 129 mm.; tail 125; hind foot 30; ear 16.

Skull: median length 38.5; diagonal length 41; zygomatic breadth 21; interorbital breadth 5.9; bimeatal breadth 23.5; palatine foramina 7.1; upper molar series 5.3. Bullæ: diagonal length 16.8; meatal length 14.5; suprimeatal triangle, length 6.4, height 5.7.

Hab. Tripoli. Type from Gebel Limhersuk, in the north-west part of the country.

Type. Adult male. B.M. no. 2. 11. 4. 64. Collected 19th July, 1901, by E. Dodson. Presented by J. I. S. Whitaker, Esq. Fourteen specimens examined.

This Tripoli gerbil is very closely allied to *pallidus*, but seems to differ fairly constantly in the characters above noted. The Sudan animal is itself very near to true *M. crassus* of Sinai, but has rather less enormous bullæ.

The specimens representing both this and *M. libycus caudatus* were included under *Meriones schousboei* in my account of the Tripolitan mammals presented by Mr. Whitaker in 1902*.

M. crassus, *pelerinus*, and *pallidus* are the species with the largest bullæ and suprimeatal triangles in the genus, and together form group *a*.

Meriones pelerinus, sp. n.

A species of group *a* allied to *M. crassus*, but with larger teeth and longer palatine foramina.

Size about as in *M. crassus* or a little larger. General colour paler and greyer than in that species, a little darker than "pinkish buff," the tips of the hairs blackened on the back, clearer on the sides. Belly quite white, not very sharply defined laterally. Lighter eye and ear-markings not strongly marked. Proectote of ears dark pinkish buff. Hands and feet white; soles with their posterior halves naked except just along the edges. Tail not very long, whitish buff, the terminal crest black, not heavily developed, extending along about 35 mm. at its end, its longest hairs 12 mm.

Skull, like *crassus*, with enormous bullæ, which project backwards about 3 mm. behind the level of the occiput, and have their premeatal swelling close against, and surpassing below, the posterior corner of the zygomata. Suprimeatal triangle very large, with rounded angles. Palatal foramina projecting backwards between the roots of *m*¹.

* P. Z. S. 1902, p. 9.

Molars decidedly larger than in *M. crassus*.

Dimensions of the type (measured in the flesh) :—

Head and body 125 mm.; tail 125; hind foot 32; ear 17.

Skull: median length 39; diagonal length 41.5; condylo-incisive length 35.5; zygomatic breadth 21.8; nasals 15; breadth of brain-case 18.3; bimeatal breadth 23; palatal foramina 7.7; upper molar series, crowns 5.9, alveoli 6.5. Bullæ: horizontal diagonal length 17; length from back of bulla to front of premeatal swelling 15; suprimeatal triangle, length 6.2, height 5.6.

Hab. Tebuk, on the Hedjaz Railway, N.W. Arabia. Alt. 2000'.

Type. Young adult male. B.M. no. 10. 3. 12. 5. Original number 5. Collected 3rd January, 1909, by Douglas Carruthers.

This species agrees with *M. crassus* in the very great size of the bullæ, the measurement from the back of the bulla to the front of the premeatal swelling decidedly surpassing that found either in the Egyptian or Tripolitan large-bulla forms. In correlation therewith the suprimeatal triangle is of a maximum size. From that species it differs by its larger molars and the greater posterior extension of its palatine foramina.

I have taken, as representing *M. crassus*, a spirit-specimen from Mt. Hor, south of the Dead Sea, collected by Mr. H. C. Hart, of which the skull seems closely to agree with that figured by Sundevall. Another specimen in skin, from the type-locality Sinai, collected by Mr. Claude Wyatt, is noticeably more ochraceous than *M. pelerinus*, but, owing to the bullæ of this example being lost, its determination is not absolutely certain.

Meriones libycus caudatus, subsp. n.

Group *b*. Closely like true *libycus* of Lower Egypt, but with markedly longer and finer tail.

General colour above warm buff, finely ticked with brown, below white with slaty bases to the hairs, as in true *libycus*. Postauricular white patches fairly well marked. Tail decidedly longer than head and body, well-tufted, the tuft beginning halfway along the upper surface, and even below covering more than the terminal inch, the hairs attaining 16–17 mm. in length. The tuft black, the rest buffy ochraceous.

Skull apparently quite as in *libycus*, the bullæ very large, the suprimeatal triangle small.

Dimensions of the type:—

Head and body 142 mm.; tail 153; hind foot 34; ear 20.

Skull: median length 40.5; diagonal length 42; zygomatic breadth 22; interorbital breadth 7.6; binacal breadth 23; palatine foramina 8.2; upper molar series 5.3. Bullæ: diagonal horizontal length 17.5; front of meatal swelling to back of bulla 15.1; supraneatal triangle, length 4.5, height 3.2.

Hab. Tripoli. Type from Ferdjan, a second specimen from El Hammam.

Type. Adult male. B.M. no. 2. 11. 4. 56. Original number 97. Collected 21st June, 1901, by E. Dodson. Presented by J. I. S. Whitaker, Esq.

This is a long-tailed form of the *b* group, with largest-sized bullæ but small supraneatal triangle. It occurs between the original *libycus* of Lower Egypt and *schousboei* of Algeria, which have both comparatively short tails, and are, indeed, very doubtfully distinguishable from each other.

Meriones syrius, sp. n.

Nearly allied to *M. erythrourus*, but with longer foot and larger teeth.

General characters quite as in *erythrourus*, with the same proportions of the bulla and approximately the same coloration of body and tail. Upper surface near "pinkish buff," paler and more approaching "light buff" on sides. Under surface white, but the hairs pale slaty basally except on the chin and throat, where they are white to the roots. Light areas behind eyes and round bases of ears not strongly marked. Ears like head, the fringing hairs buffy white. Hands and feet white, more or less washed with buffy on the metapodials. Tail ochraceous, the terminal crest well developed, black, commencing rather more than halfway along the upper side.

Skull apparently like that of *erythrourus*, though rather more robustly built. Bullæ equally large, with a marked inflation on the front side of the meatus just surpassing the level of the hindermost point of the zygoma.

Incisors less bevelled and with less sharply defined groove than in *erythrourus*. Molars distinctly smaller.

Dimensions of the type:—

Head and body 142 mm.; tail 145; hind foot 35; ear 18.

Skull: median length 42.5; diagonal length to back of

bullæ 42·8; condylo-incisive length 39; zygomatic breadth 24·5; nasals 16·2; interorbital breadth 8; breadth of brain-case 18; meatal breadth 22·8; palatine foramina 7·6; upper molar series 5·8. Bullæ: horizontal diagonal length 16·2; back of bulla to front of meatal swelling 12·8; supra-meatal triangle, length 5, height 3.

Hab. Syrian Desert. Type from Karyatein (spelt Kargeten in Stieler's Atlas). Alt. 2000'. Another specimen from a point 320 km. east of the Dead Sea, 3000'.

Type. Adult male. B.M. no. 5. 7. 2. 2. Original number 27. Collected 3rd March, 1905, by Douglas Carruthers.

Of these gerbils with large bullæ—all once referred to *M. erythrourus*,—the true bearer of that name occurs in Afghanistan, ranging westwards through Persia to the edge of the highlands; then in the lower littoral country comes the smaller *M. charon*, succeeded again in the Syrian desert by the present species, which, though more like true *erythrourus*, is distinguishable by its longer feet and larger teeth.

Meriones charon, sp. n.

A small species with terminally crested tail, allied to *M. longifrons*.

Size a little less than in *M. longifrons*. General colour above finely speckled sandy buff ("pinkish buff" darkened by the brown points of the hairs), the tone warmer on the posterior back. Under surface white, the lateral line of demarcation not specially sharply defined. Cheeks greyish, the postorbital and postauricular whitish spots scarcely marked. Ears rather short, coloured like the head. Hands and feet white; soles with the median area of their proximal halves naked, their terminal halves hairy. Tail not very long, its greater portion short-haired, dull buffy, not more ochraceous than the body, its terminal 25–30 mm. with an upper crest of black hairs which may attain 15 mm. in length at the tip.

Skull very much as in *M. longifrons*, but the bullæ less swollen, their antero-internal extension considerably less. Suprameatal triangle nearly as high as long.

Dimensions of the type:—

Head and body 129 mm.; tail 132; hind foot 29·5; ear 17·5.

Skull; median length 37·2; diagonal length to back of bulla 38·3; condylo-incisive length 33·5; zygomatic breadth

20; meatal breadth 21; nasals 14·5; interorbital breadth 5·8; breadth across brain-case 17; palatine foramina 7·5; upper molar series 5·2. Bullæ: greatest diagonal horizontal length 15; back to antemeatal swelling 12·4; suprimeatal triangle, length 5, height 3·5.

Hab. Coastal plain in region of Karun River, Persia. Type from Ahwaz, alt. 220'. Mound of Susa (*K. Loftus*).

Type. Adult male. B.M. no. 5. 10. 4. 38. Original number 22. Collected 30th March, 1905, by R. B. Woosnam. Presented by Col. A. C. Bailward.

This gerbil is most nearly allied to Lataste's *longifrons* from Jedda, on the Red Sea, but may be distinguished by its smaller bullæ.

Mr. Woosnam says of it in February 1905:—"Plentiful all along the flat coast plain from Bushire to the Karun River"; but at the end of March he says "only a few here now, probably owing to failure of corn crop."

The Museum contains a specimen sent home by Kenneth Loftus from the Mound of Susa in 1853, two spirit-specimens from Ahwaz presented by Dr. Jayakar in 1900, and three excellent skins collected by Mr. Woosnam.

Meriones ambrosius, sp. n.

A naked-soled, bushy-tailed gerbil, related to *M. persicus*, but with smaller bullæ.

Size rather large. General colour above a beautiful "cinnamon-buff," slightly darker on the back, clearer on the sides, the posterior back of a rather warmer tone than the anterior; more uniform and less speckled throughout than in most species of the genus. Under surface as usual pure sharply defined white, the line of demarcation rather high up on the sides. A white spot above and behind each eye, and another above and behind the base of each ear; ear long, coloured like head. Hands and feet pure white. Soles smooth and naked posteriorly, granulated and naked anteriorly, but between the two, behind the granulations, there is an area with a certain number of small hairs on it. Tail long, rather heavily tufted terminally, the hairs attaining 20 mm. and more in length in the tuft, which is all round the tail, not specialized as a crest; main part of tail buffy, tuft dark brown.

Skull rather smaller than that of *persicus*, narrower across the brain-case, and with very much smaller bullæ. These are without any antemeatal swelling, do not project so far

backwards as the occipitals, and their postmeatal portion is but little swollen, with a straight posterior margin.

Dimensions of the type:—

Head and body 161 mm.; tail 183; hind foot 41; ear 28.

Skull: greatest length (median) 43; condylo-incisive length 38·5; zygomatic breadth 22·5; nasals 16·6; inter-orbital breadth 7; least breadth across brain-case 17·2; meatal breadth 21·3; palatine foramina 8·3; upper molar series 6·2. Bullæ: greatest diagonal horizontal diameter 13; distance from back of bulla to front of meatus 9; supra-meatal triangle, length 3·5, height 2.

Hab. (of type). Dopolan, Bichtiari Mountains, 120 miles N.E. of Ahwaz, Persia. Alt. 6000'.

Type. Adult male. B.M. no. 5. 10. 4. 35. Original number 36. Collected 18th April, 1905, by R. B. Woosnam; presented by Col. A. C. Bailward.

In my account of the Bailward collection * I referred this exceedingly handsome gerbil to *M. persicus*; but now that I realize the systematic value of the difference in size of the bullæ, I consider it should be distinguished specifically from that animal.

Meriones isis, sp. n.

The Lower Egypt representative of the *c* group, that of which *M. shawi* is typical.

Size rather less than in true *shawi*. General colour rather greyish or drabby buff, but of the only two available skins one has been exhibited for many years and the other skinned out of spirit. Underside white, the hairs slaty at base. Light ear-patches little developed. Tail rather shorter than head and body, dull whitish or buffy whitish on the sides and for its whole length below, slightly darkened above by blackish hairs, but very little tufted at the end, the longest hairs barely 10 mm. in length.

Skull, as compared with that of *M. guyoni*, the South-Algerian and Tripolitan representative of *M. shawi*, of similar general form, with comparatively small bullæ and small supra-meatal triangles. Bullæ, however, slightly smaller, and interorbital breadth distinctly greater, this latter being the chief difference between the Egyptian and Algerian animals. Palatine foramina reaching to the level of the anterior root of *m*¹.

* P. Z. S. 1905, ii. p. 523.

Dimensions of the type (measured on a skin):—

Head and body 140 mm.; tail 131; hind foot 32·5.

Skull: median length 39; diagonal length 39; zygomatic breadth 23·5; nasals 14·3; interorbital breadth 8; bimeatal breadth 21; palatine foramina 7·6; upper molar series 5·6. Bullæ: diagonal length 14; meatal length (back of bulla to front of meatal swelling) 11; suprimeatal triangle, length 3·9, height 3·1.

Hab. Lower Egypt. Type from Ramleh, near Alexandria.

Type. Adult male. B.M. no. 92. 7. 1. 6. Collected and presented by Dr. John Anderson.

This is in part the "*Meriones shawi*, var. *melanurus*" of Anderson and de Winton's 'Mammals of Egypt,' but, as already explained, it seems best to apply the name *melanurus* to the form which has the prominent black tuft to the tail, and so agrees with Rüppell's figure and description. That name being disposed of, and the species being distinguished from the Algerian *guyoni* by its broader interorbital region, a new name becomes necessary for it.

Meriones blackleri lycaon, subsp. n.

General characters of true *blackleri* of Smyrna, but the colour warmer and more ochraceous and the tail without the white tip which occurs in all our four specimens of *blackleri*. Colour of back approaching cinnamon-buff; belly-hairs white to their bases. A whitish patch between eye and muzzle, behind eyes, and a small one behind ears. Hands and feet white; soles with but a narrow area along the centre of the proximal half naked. Tail buffy whitish, the terminal crest extending for about 2 inches at its end, not heavily developed, blackish, not becoming white at the extreme tip.

Skull averaging rather larger than in *blackleri*, but the specimens are mostly older. Palatine foramina ending quite in front of the roots of m^1 , those of *blackleri* attaining the level of these latter. Bullæ slightly larger.

Dimensions of the type:—

Head and body 129 mm.; tail 146; hind foot 33; ear 20.

Skull: greatest median length 41; diagonal length to back of bullæ 41; zygomatic breadth 22·4; nasals 17·7; breadth across brain-case 17·1; bimeatal breadth 20; palatal foramina 7·3; upper molar series 5·2. Bullæ: length 12·8; front of meatal swelling to back of bulla 9.

Hab. Kara Dag, Lycaonia, Asia Minor. Alt. 3800'.

Type. Adult male. B.M. no. 8. 7. 1. 28. Original

number 18. Collected 3rd June, 1907, and presented by L. H. G. Ramsay, Esq. Five specimens.

It so happens that all the five specimens of this highland gerbil are older than any of the four of true *blackleri* from comparatively low down at Smyrna; but if the colour is affected by this fact, and even possibly the relative position of the palatine foramina and teeth, the constant presence in *blackleri* and absence in *lycaon* of a white tip to the tail seem to justify a special subspecific name for the highland form.

XXVII.—*Notes on the Family Dendrocolaptidæ, with Suggestions for its Division.* By CHARLES CHUBB, F.Z.S., M.B.O.U., Zoological Department, British Museum (Natural History).

WHEN the late Dr. P. L. Selater wrote the fifteenth volume of the 'Catalogue of the Birds in the British Museum' he included in the family Dendrocolaptidæ the ground-birds, bush-birds, and tree-climbing birds, dividing them into the following subfamilies:—Furnariinæ, Synallaxinæ, Philydorinæ, Sclerurinæ, and Dendrocolaptinæ. This was followed by the late Dr. Bowdler Sharpe in the 'Hand-list of Birds,' vol. iii. 1901, with two additional subfamilies, viz., Margarornithinæ and Glyphorhinæ, which had been established by Salvin and Godman (Biol. Centr.-Amer., Aves, ii. pp. 109, 171). Professor Ridgway, in his 'Birds of North and Middle America,' vol. v. pp. 157–295 (1911), has divided these into two families under the following titles:—Furnariidæ and Dendrocolaptidæ. Brabourne and Chubb, in their 'List of the Birds of South America,' did not recognize any of the divisions mentioned above, but simply included them all under the family Dendrocolaptidæ.

It appears to me, however, that these may be divided into four families, the first to include those that are essentially ground-birds—Furnariidæ—with the following genera:—

Geobates, Swains., 1838.

Geositta, Swains., 1837.

Furnarius, Vieill., 1816.

Upucerthia, Geoffr. Saint-Hilaire, 1832.

Cinclodes, Gray, 1840.